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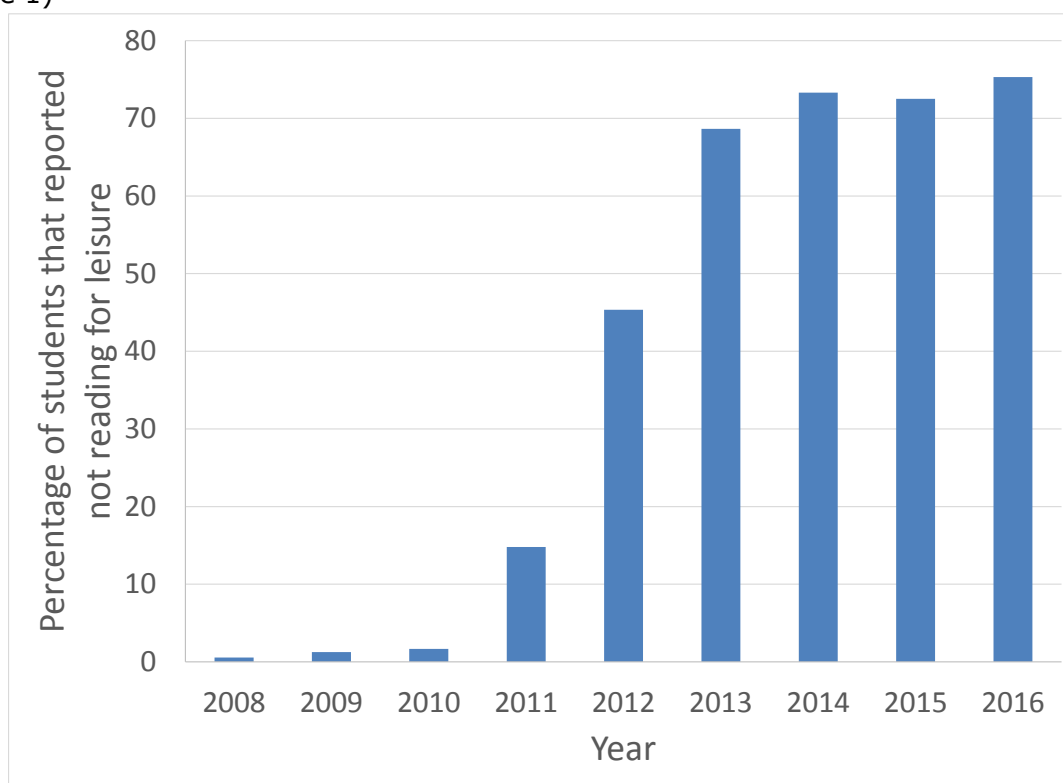
McCollum, B. (2018, September). Opening up textbooks and students' reading habits. *ACCN (Canadian Chemical News)*. Originally published at <https://www.cheminst.ca>

Opening up textbooks and students' reading habits

Brett McCollum

For several years, during my first lecture of each semester I would invite my general chemistry students to introduce themselves to their neighbours. They would share their name, intended major, and favourite genre for reading. Students would share their passion for reading, from horror and romance, to science fiction and war history. However, something changed in 2011, as the graph in figure 1 illustrates. For the first time, a large group of my students said they didn't have a favourite genre. The following year, it was almost half my class. By 2013, it was nearing 70% of my students that didn't have a favourite genre of book. They also couldn't name the last book they had read. In fact, they openly admitted that they didn't read for leisure at all! Interestingly, this pattern seemed to be associated through an inverse relationship to the proportion of my students that owned a smart phone.

(Figure 1)



It was about the same time that I noticed course reading compliance had taken a significant dive. Some students were returning the textbook at the end of semester still wrapped in plastic. Others avoided the inconvenience of going to the bookstore altogether, and simply never bought the book. I wasn't too concerned about the textbook reading. After all, I had well organized lectures, and I had always viewed the textbook as a support resource. I was

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more disappointed that university students weren't enriching and challenging themselves with literature - or even casual reading.

However, over time I noticed my students were less successful in applying concepts I demonstrated through example problems to exam questions. I started to hear complaints that my exams weren't fair because "it wasn't the same problem as in the lecture notes". I realized that students weren't able to fill-in all the details from that notes that they would typically get from a textbook. In other words, my students needed to read a textbook. Furthermore, I wanted to get the *same* textbook in the hands of every student, no matter their financial situation, so that all of my students would have access to the same reading materials. This would allow my students to discuss the text, figures, and equations through small groups in class. As I began exploring changes I could make to my practice that would better integrate the textbook into the learning experience, I struggled to find an answer for what I would do about students that couldn't afford the \$250 book selected by the department.

The solution to my problem was introduced to me during the 97th Canadian Chemistry Conference and Exhibition (CSC 2014) in Vancouver: LibreText¹. Formerly called ChemWiki, LibreText is the brainchild of Delmar Larsen, Associate Professor of Chemistry at the University of California at Davis. Partnering with his students, as well as faculty at other institutions, Larsen had constructed a massive library of open-access web pages addressing a collection of topics in chemistry. Similar to Wikipedia, the resource was crowd constructed and under constant growth and refinement. In contrast to Wikipedia, users had to be vetted before given permission to edit the HyperLibrary. Several years later, LibreTexts is now the most popular and highest ranked open educational resource (OER) textbook project on the net, with over 60 million pageviews annually, and a cumulative cost savings to students of \$30 million USD.

Larsen credits social justice as his motivation for joining the OER movement.

"It was clear that many of my students were not purchasing textbooks for my courses due to their outrageous costs and many students' limited financial resources. I felt this was detrimental to their education and hindered my teaching mission. Moreover, I felt guilty about assigning expensive textbooks that were blocking the education of the less affluent students in my class and felt a change to the status quo of how textbooks were used/assigned in upper education was needed."

Governments have an important role to play in the development of OERs. Several provinces have allocated funding to support the development and adoption of OERs, such as OpenBC², AB-OER³, and eCampus Ontario⁴. Jessie Key, Associate Professor of Chemistry at Vancouver

¹ <https://chem.libretexts.org/>

² <https://open.bccampus.ca/>

³ <http://albertaoer.com/>

⁴ <https://www.ecampusontario.ca/open-education-resources/>

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Island University, was one of the three pioneers of the BC Campus OpenEd Faculty Fellow Program in 2014. His department at VIU uses OERs for all first year chemistry courses: Chemistry Fundamentals I, Chemistry Fundamentals II, and Engineering Chemistry.

"Primarily, we have adapted existing materials. For example, we have taken the Openstax textbook and customized it to our course learning outcomes. This has meant fixing minor errors/typos and adding additional resources, including some chapter sections and end of chapter problems."

Key also insists that the quality and availability of OER resources continues to improve.

"Although it may require some time investment, I believe faculty should try to investigate if these resources could be used in their courses. OERs can help to remove or lessen the financial barriers present in education - better levelling the playing field for all learners and also potentially reducing the need or size of student loans. This makes your course and its content more accessible. Also, unlike traditional textbooks, most OERs can be readily edited, modified, or customized by instructors to suit the needs of your course learning outcomes."

OERs have come a long way in recent years, through the distributed efforts of those that adopt and help refine the products. Larsen provides a few words of advice for faculty evaluating the quality of OER products.

"Many OER texts are just as good as or better than many publisher textbooks, and many are not. It is important to recognize that OER is still new compared to the existing publisher infrastructure. However, OER efforts are fragmented making it difficult to fully benefit from the crowd-sourced approach that underlies open education, but as bigger OER projects grow and work together that will be fixed. Building and improving the quality of OER is a fast moving train and it is important for faculty not to get stuck with their initial opinions of such resources."

With Larsen's assistance, I curated and created the necessary content for my course. As I anticipated, moving to an OER on its own didn't get my students to read their textbook. However, lowering the textbook cost barrier alongside other changes to my instructional approach has reengaged my students in their academic reading with pre-class reading compliance of 95%⁵. After my initial use of LibreTexts, the adoption spread across the department for all of general chemistry. We estimate that in the past three years we have helped first-year students at our university save over a quarter-million dollars. Even better in my opinion, my students have rediscovered the value of reading.

⁵ <https://pubs.acs.org/doi/abs/10.1021/bk-2016-1235.ch002>

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